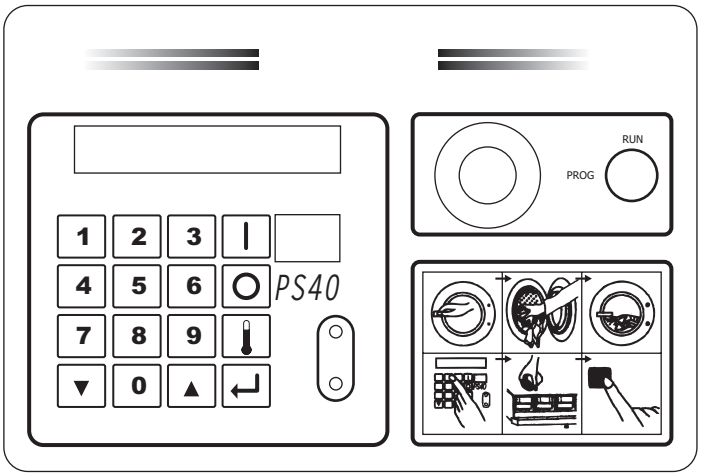
Washer-Extractors

Pocket Hardmount Variable-Speed

PS40 Control

Refer to Page 9 for Model Identification

Programming



PHM1398C

Keep These Instructions for Future Reference.
(If this machine changes ownership, this manual must accompany machine.)

Alliance Laundry Systems

www.comlaundry.com

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Safety Information

Explanation of Safety Messages

Precautionary statements ("DANGER," "WARNING," and "CAUTION"), followed by specific instructions, are found in this manual and on machine decals. These precautions are intended for the personal safety of the operator, user, servicer, and those maintaining the machine.

DANGER

DANGER indicates the presence of a hazard that will cause severe personal injury, death, or substantial property damage if the danger is ignored.

WARNING

WARNING indicates the presence of a hazard that can cause severe personal injury, death, or substantial property damage if the warning is ignored.

CAUTION

CAUTION indicates the presence of a hazard that will or can cause minor personal injury or property damage if the caution is ignored.

Additional precautionary statements ("IMPORTANT" and "NOTE") are followed by specific instructions.

IMPORTANT: The word "IMPORTANT" is used to inform the reader of specific procedures where minor machine damage will occur if the procedure is not followed.

NOTE: The word "NOTE" is used to communicate installation, operation, maintenance or servicing information that is important but not hazard related.

Important Safety Instructions

WARNING

To reduce the risk of fire, electric shock, serious injury or death to persons when using your washer, follow these basic precautions:

W023

1. Read all instructions before using the washer.
2. Refer to the GROUNDING INSTRUCTIONS in the INSTALLATION manual for the proper grounding of the washer.
3. Do not wash textiles that have been previously cleaned in, washed in, soaked in, or spotted with gasoline, kerosene, waxes, cooking oils, dry-cleaning solvents, or other flammable or explosive substances as they give off vapors that could ignite or explode.
4. Do not add gasoline, dry-cleaning solvents, or other flammable or explosive substances to the wash water. These substances give off vapors that could ignite or explode.
5. Under certain conditions, hydrogen gas may be produced in a hot water system that has not been used for two weeks or more. HYDROGEN GAS IS EXPLOSIVE. If the hot water system has not been used for such a period, before using a washing machine or combination washer-dryer, turn on all hot water faucets and let the water flow from each for several minutes. This will release any accumulated hydrogen gas. The gas is flammable, do not smoke or use an open flame during this time.
6. Do not allow children to play on or in the washer. Close supervision of children is necessary when the washer is used near children. This is a safety rule for all appliances.
7. Before the washer is removed from service or discarded, remove the door to the washing compartment.
8. Do not reach into the washer if the wash drum is moving.

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9. Do not install or store the washer where it will be exposed to water and/or weather.
10. Do not tamper with the controls.
11. Do not repair or replace any part of the washer, or attempt any servicing unless specifically recommended in the user-maintenance instructions or in published user-repair instructions that the user understands and has the skills to carry out.
12. To reduce the risk of an electric shock or fire, DO NOT use an extension cord or an adapter to connect the washer to the electrical power source.
13. Use washer only for its intended purpose, washing textiles.
14. Never wash machine parts or automotive parts in the machine. This could result in serious damage to the basket.
15. ALWAYS disconnect the washer from electrical supply before attempting any service. Disconnect the power cord by grasping the plug, not the cord.
16. Install the washer according to the INSTALLATION INSTRUCTIONS. All connections for water, drain, electrical power and grounding must comply with local codes and be made by licensed personnel when required.
17. To reduce the risk of fire, textiles which have traces of any flammable substances such as vegetable oil, cooking oil, machine oil, flammable chemicals, thinner, etc., or anything containing wax or chemicals such as in mops and cleaning cloths, must not be put into the washer. These flammable substances may cause the fabric to catch on fire by itself.
18. Do not use fabric softeners or products to eliminate static unless recommended by the manufacturer of the fabric softener or product.
19. Keep washer in good condition. Bumping or dropping the washer can damage safety features. If this occurs, have washer checked by a qualified service person.
20. Be sure water connections have a shut-off valve and that fill hose connections are tight. CLOSE the shut-off valves at the end of each wash day.
21. Loading door MUST BE CLOSED any time the washer is to fill, tumble or spin. DO NOT bypass the loading door switch by permitting the washer to operate with the loading door open.
22. Always read and follow manufacturer's instructions on packages of laundry and cleaning aids. Heed all warnings or precautions. To reduce the risk of poisoning or chemical burns, keep them out of the reach of children at all times (preferably in a locked cabinet).
23. Always follow the fabric care instructions supplied by the textile manufacturer.
24. Never operate the washer with any guards and/or panels removed.
25. DO NOT operate the washer with missing or broken parts.
26. DO NOT bypass any safety devices.
27. Failure to install, maintain, and/or operate this washer according to the manufacturer's instructions may result in conditions which can produce bodily injury and/or property damage.

NOTE: The WARNINGS and IMPORTANT SAFETY INSTRUCTIONS appearing in this manual are not meant to cover all possible conditions and situations that may occur. Common sense, caution and care must be exercised when installing, maintaining, or operating the washer.

Any problems or conditions not understood should be reported to the dealer, distributor, service agent or the manufacturer.

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WARNING

This machine must be installed, adjusted, and serviced by qualified electrical maintenance personnel familiar with the construction and operation of this type of machinery. They must also be familiar with the potential hazards involved. Failure to observe this warning may result in personal injury and/or equipment damage, and may void the warranty.

SW004

IMPORTANT: Ensure that the recommended clearances for inspection and maintenance are provided. Never allow the inspection and maintenance space to be blocked.

CAUTION

Install the machine on a level floor of sufficient strength. Failure to do so may result in conditions which can produce serious injury, death and/or property damage.

W703

CAUTION

Be careful around the open door, particularly when loading from a level below the door. Impact with door edges can cause personal injury.

SW025

WARNING

Never touch internal or external steam pipes, connections, or components. These surfaces can be extremely hot and will cause severe burns. The steam must be turned off and the pipe, connections, and components allowed to cool before the pipe can be touched.

SW014

Safety Decals

Safety decals appear at crucial locations on the machine. Failure to maintain legible safety decals could result in injury to the operator or service technician.

To provide personal safety and keep the machine in proper working order, follow all maintenance and safety procedures presented in this manual. If questions regarding safety arise, contact the manufacturer immediately.

Use manufacturer–authorized spare parts to avoid safety hazards.

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Operator Safety

WARNING

NEVER insert hands or objects into basket until it has completely stopped. Doing so could result in serious injury.

SW012

To ensure the safety of machine operators, the following maintenance checks must be performed daily:

1. Prior to operating machine, verify that all warning signs are present and legible. Missing or illegible signs must be replaced immediately. Make certain that spares are available.
2. Check door interlock before starting operation of machine:
   a. Attempt to start machine with door open. Machine should not start with door open.
   b. Close door without locking it and attempt to start machine. Machine should not start with door unlocked.
   c. Close and lock door and start a cycle. Attempt to open door while cycle is in progress. Door should not open.

   If door lock and interlock are not functioning properly, call a service technician.
3. Do not attempt to operate machine if any of the following conditions are present:
   a. Door does not remain securely locked during entire cycle.
   b. Excessively high water level is evident.
   c. Machine is not connected to a properly grounded circuit.

Do not bypass any safety devices in machine.

WARNING

Never operate the machine with a bypassed or disconnected balance system. Operating the machine with severe out-of-balance loads could result in personal injury and serious equipment damage.

SW039

Safe Operating Environment

Safe operation requires an appropriate operating environment for both the operator and the machine. If questions regarding safety arise, contact the manufacturer immediately.

Environmental Conditions

- *Ambient Temperature*. Water in machine will freeze at temperatures of 32°F (0°C) or below.

  Temperatures above 120°F (50°C) will result in more frequent motor overheating and, in some cases, malfunction or premature damage to solid state devices that are used in some models. Special cooling devices may be necessary.

  Water pressure switches are affected by increases and decreases in temperature. Every 25°F (10°C) change in temperature will have a 1% effect on the water level.
- *Humidity.* Relative humidity above 90% may cause machine's electronics or motors to malfunction or may trip ground fault interrupter. Corrosion problems may occur on some metal components in machine.

  If relative humidity is below 30%, belts and rubber hoses may eventually develop dry rot. This condition can result in hose leaks, which may cause safety hazards external to machine in conjunction with adjacent electrical equipment.
- *Ventilation*. The need for make-up air openings for such laundry room accessories as dryers, ironers, water heaters, etc., must be evaluated periodically. Louvers, screens or other separating devices may reduce available air opening significantly.
- *Radio Frequency Emissions*. A filter is available for machines in installations where floor space is shared with equipment sensitive to radio frequency emissions.
- *Elevation*. If machine is to be operated at elevations of over 3280 feet (1000 m) above sea level, pay special attention to water levels and electronic settings (particularly temperature) or desired results may not be achieved.
- *Chemicals*. Keep stainless steel surfaces free of chemical residues.

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DANGER

Do not place volatile or flammable fluids in any machine. Do not clean the machine with volatile or flammable fluids such as acetone, lacquer thinners, enamel reducers, carbon tetrachloride, gasoline, benzene, naptha, etc. Doing so could result in serious personal injury and/or damage to the machine.

SW002

- *Water Damage*. Do not spray machine with water. Short circuiting and serious damage may result. Repair immediately all seepage due to worn or damaged gaskets, etc.

Machine Location

- *Foundation*. The concrete floor must be of sufficient strength and thickness to handle floor loads generated by high extract speeds of machine.
- *Service/Maintenance Space*. Provide sufficient space to allow comfortable performance of service procedures and routine preventive maintenance.

Consult installation instructions for specific details.

CAUTION

Replace all panels that are removed to perform service and maintenance procedures. Do not operate the machine with missing guards or with broken or missing parts. Do not bypass any safety devices.

SW019

Input and Output Services

- *Water Pressure*. Best performance will be realized if water is provided at a pressure of 30 – 85 psi (2 – 5.7 bar). Although machine will function properly at lower pressure, increased fill times will occur. Water pressure higher than 100 psi (6.7 bar) may result in damage to machine plumbing. Component failure(s) and personal injury could result.
- *Steam Heat (Optional) Pressure*. Best performance will be realized if steam is provided at a pressure of 30 – 80 psi (2 – 5.4 bar). Steam pressure higher than 125 psi (8.5 bar) may result in damage to steam components and may cause personal injury.

  For machines equipped with optional steam heat, install piping in accordance with approved commercial steam practices. Failure to install supplied steam filter may void warranty.
- *Drainage System*. Provide drain lines or troughs large enough to accommodate total number of gallons that could be released if all machines on site drained at same time from highest attainable level. If troughs are used, they should be covered to support light foot traffic.
- *Power*. For personal safety and for proper operation, machine must be grounded in accordance with state and local codes. Ground connection must be to a proven earth ground, not to conduit or water pipes. Do not use fuses in place of circuit breaker. An easy-access cutoff switch should also be provided.

WARNING

Ensure that a ground wire from a proven earth ground is connected to the ground lug near the input power block on this machine. Without proper grounding, personal injury from electric shock could occur and machine malfunctions may be evident.

SW008

Always disconnect power and water supplies before a service technician performs any service procedure. Where applicable, steam and/or compressed air supplies should also be disconnected before service is performed.

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DirectDrive

Machines equipped with DirectDrive require special attention with regard to operating environment.

- An especially dusty or linty environment will require more frequent cleaning of AC inverter drive cooling fan filter and of AC inverter drive itself.
- Power line fluctuations from sources such as uninterruptible power supplies (UPS) can adversely affect machines equipped with AC inverter drive. Proper suppression devices should be utilized on incoming power to machine to avoid problems.
- A clean power supply free from voltage spikes and surges is absolutely essential for machines equipped with AC inverter drive. Inconsistencies (peaks and valleys) in power supply can cause AC inverter drive to generate nuisance errors.

  If voltage is above 230 Volt for 200 Volt installation or 460 Volt for 400 Volt installation, ask power company to correct. As an alternative, a step-down transformer kit is available from distributor. If voltage is above 240 Volt for 200 Volt installation or 480 Volt for 400 Volt installations, a buckboost transformer is required.
- Sufficient space to perform service procedures and routine preventive maintenance is especially important for machines equipped with AC inverter drive.

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Model Identification

Information in this manual is applicable to these models:

	Medium Speed		High Speed	
40 Pound	CP040PMN1 CP040PMQ1 CP040PMX1 CPC40M IP040PMN1	IP040PMQ1 IP040PMX1 IPH40M IPH180	CP040PHN1 CP040PHQ1 CP040PHX1 CPC40H IP040PHN1	IP040PHQ1 IP040PHX1 IPH40H JP040PHN1 JP040PHQ1
60 Pound	CP060PMN1 CP060PMQ1 CP060PMX1 CPC60M IP060PMN1	IP060PMQ1 IP060PMX1 IPH60M IPH270 JP060PMQ1	CP060PHN1 CP060PHQ1 CP060PHX1 CPC60H IP060PHN1	IP060PHQ1 IP060PHX1 IPH60H JP060PHN1 JP060PHQ1
80 Pound	CP080PMN1 CP080PMQ1 CPC80M IP080PMN1	IP080PMQ1 IPH80M IPH370	CP080PHN1 CP080PHQ1 CPC80H IP080PHN1	IP080PHQ1 IPH80H JP080PHN1 JP080PHQ1
100 Pound	CP100PMN1 CP100PMQ1 CPC100M IP100PMN1	IP100PMQ1 IPH100M IPH460 JP100PMQ1	CP100PHN1 CP100PHQ1 CPC100H IP100PHN1	IP100PHQ1 IPH100H JP100PHN1 JP100PHQ1
125 Pound	Not Applicable		CP125PHN1 CP125PHQ1 CPC125H IP125PHN1	IP125PHQ1 IPH125H IPH570 JP125PHN1
140 Pound	CP140PMN1 CP140PMQ1 CPC140M IP140PMN1	IP140PMQ1 IPH140M IPH640 JP140PMQ1	CP140PHN1 CP140PHQ1 CPC140H IP140PHN1	IP140PHQ1 IPH140H JP140PHN1 JP140PHQ1
175 Pound	Not Applicable		CP175PHN1 CPC175H IP175PHN1	IPH175H IPH790

Model Number Familiarization Guide	
Sample Model Number: **IP060PMQ1**	
I	Model Number Prefix Brand
P	Product Family; P=IPH
060	Washer-Extractor Capacity (pounds dry weight of laundry)
P	Type of Control; P=PS40
M	Spin Speed; M=Medium
Q	Electrical Voltage; Q=200-208/220-240 Volt/50 or 60 Hertz/3 Phase

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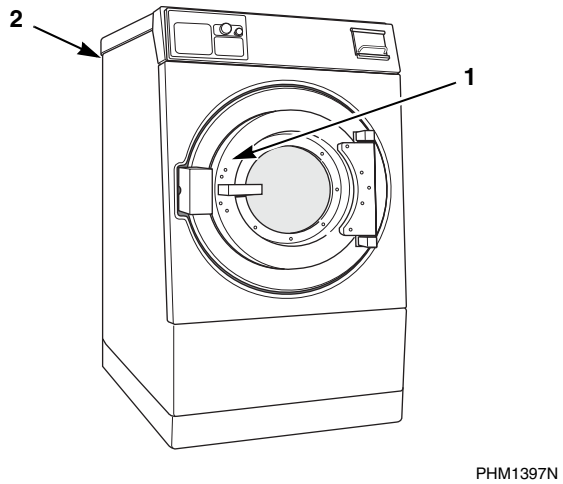
Introduction

This manual is designed as a guide for the installation of a washer-extractor equipped with DirectDrive.

NOTE: All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice.

Nameplate Location

The nameplate is located inside the door and on the upper rear panel. Always provide the machine's serial number and model number when ordering parts or when seeking technical assistance. Refer to *Figure 1*.



1 Inside Door
2 On Upper Rear Panel

Figure 1

Replacement Parts

If literature or replacement parts are required, contact the source from which the washer-extractor was purchased or contact Alliance Laundry Systems LLC at (920) 748-3950 for the name of the nearest authorized parts distributor. A parts manual may be ordered by returning the reply card provided with each washer-extractor.

Customer Service

For technical assistance, contact your local distributor or call:

(920) 748-3121
Ripon, Wisconsin

A record of each washer-extractor is on file with the manufacturer. Always provide the machine's serial number and model number when ordering parts or when seeking technical assistance. Refer to *Figure 1*.

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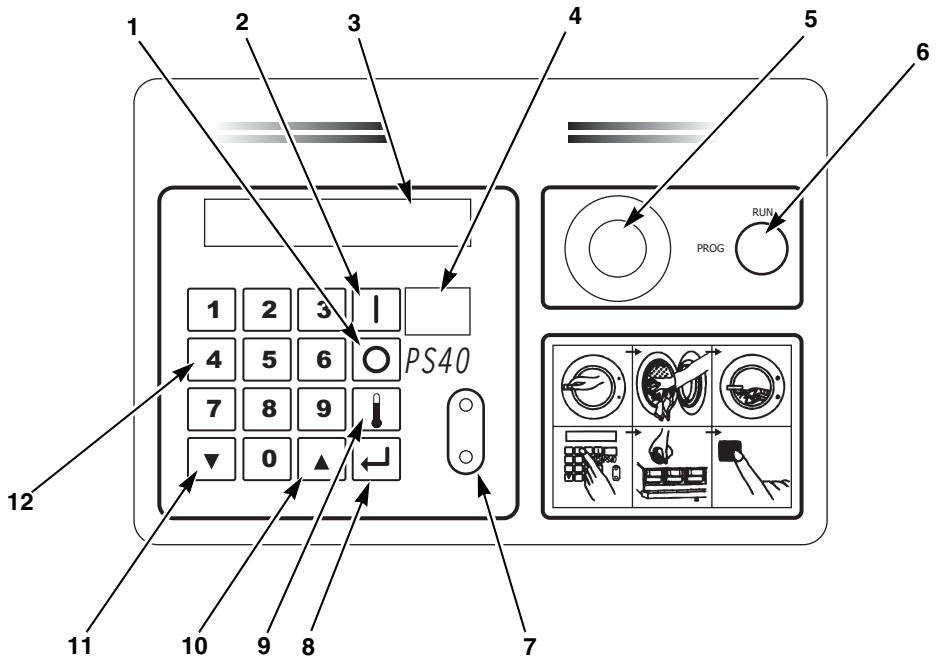
Control Identification



PHM1398C

1	Stop Button	**7**	Infra-Red Programming Port
2	Start Button	**8**	Enter Button
3	Main Display	**9**	Temperature/Toggle Button
4	Program Number/Alarm Display	**10**	Up Button
5	Emergency Stop Button	**11**	Down Button
6	Run/Program Mode Key Switch	**12**	Number Buttons

Figure 2

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Start-up

No equipment installation is complete until guidelines for startup listed herein have been followed.

1. Check incoming AC voltage at circuit breaker for machine manufacturer's recommended voltage.
2. Activate auto grease cartridges. If they have previously been activated, replace them. Inspect all lubricating hoses for air bubbles (if applicable).
3. Turn on circuit breaker to machine.
4. Check AC voltage on washer-extractor incoming power terminal strip.
5. Turn on water supplies to washer-extractor.
6. Check water inlet fill hoses and water inlet valves for leaks.
7. Inspect drive belts and pulleys for adjustment and proper alignment.
8. Turn on electrical power at emergency stop button of washer-extractor.
9. Pre-program/configure/commission microprocessor following instructions in ***Setup (Pre-Program) Mode*** section.
10. After checking all outputs, perform tests listed in ***Test Mode*** section.
11. Run a factory program through to its completion with a load. Look, watch and listen. Investigate any leaks, noises or shaking of machine completely.

Setup (Pre-Program) Mode

In order to access setup (pre-program) mode, insure that "StArt" is on display, turn programming key to "Program" and quickly press enter "619" on the keypad (all four buttons must be pressed quickly). If "Prog 19" appears, keys were not pressed quickly enough. Press stop button to abort and repeat process. If "ProGrAM" appears, you are in setup (pre-program) mode. Press enter button and "PrE" will appear on display.

NOTE: Use temperature key to alter/toggle selection. Use stop button to back up one selection at a time.

PrE	Setup (pre-program) mode. Press enter.
HF	Cannot be altered with the keypad. Press enter.
FC	Cannot be altered with the keypad. Press enter.
Coin	Does not apply. Always select "no Coin". Press enter.
LECo	Level control. Do you want the ability to make the program stop until a water level is achieved? Press temperature button to alter your selection. Press enter. **NOTE: Level control will add time to the total program time.**
le.pct	Do you want to select the water levels by percentage of cylinder volume? Select "no le.pct" if you want to set the water level in centimeters. Press temperature button to alter your selection. Press enter.
SE.i	Cannot be altered. Proceed to water inlet valve selection. Select all inlet valves that are equipped with machine, if desired. Press enter.

Table 1 (continued)

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Table 1 (continued)

NOTE: Not all machines have five soap components. Refer to the 12th digit in the model number. If it is a 5 or 6, there are 5 soap compartments.	
i1	Powdered supply compartment number 1. Press temperature button to alter selection, then press enter.
i2	Powdered supply compartment number 2. Press temperature button to alter selection, then press enter.
i3	Powdered supply compartment number 3. Press temperature button to alter selection, then press enter.
i4	Powdered supply compartment number 4. Press temperature button to alter selection, then press enter.
i5	Powdered supply compartment number 5. Press temperature button to alter selection, then press enter.
i6	Not used on this model. Press enter.
iCold	Main cold water inlet fill valve. Press temperature button to alter selection, then press enter.
iHot	Main hot water inlet fill valve. Press temperature button to alter selection, then press enter.
i9	Liquid supply flush valve, activates for a brief period after a predetermined time upon liquid supply injection signal or to be used as an additional cold water inlet valve. Press temperature button to alter selection, then press enter.
i9 FluSH	Select between liquid supply flush valve or additional cold water inlet (i9 Hard). Press temperature button to alter selection, then press enter. **NOTE: If "i9 Hard" was selected, "no ir1" will be displayed. If "i9 FluSH" was selected, "FL t 00" will be displayed.**
FL t 00	Input the number of seconds that you wish i9 to open after each chemical injection (15 seconds recommended). Press enter.

Table 1 (continued)

Table 1 (continued)

FL d 00	Input the number of seconds delay before i9 opens (15 seconds recommended). Press enter. **NOTE: During each chemical injection the flush valve (i9) will turn on to flush chemicals. Each time a chemical injection is called for, the PS40 will wait for time programmed in "FL d" and then flush chemical drippage for time programmed in "FL t".**
no ir1	Optional water reuse valve number 1. Press temperature button to alter selection, then press enter.
no ir2	Optional water reuse valve number 2. Press temperature button to alter selection, then press enter.
no ir3	Optional water reuse valve number 3. Press temperature button to alter selection, then press enter.
no rP	Optional water recirculating pump. Press temperature button to alter selection, then press enter.
d1	Drain valve number 1 (standard equipment). Press temperature button to alter selection, then press enter.
no d2	Optional drain valve number 2. Press temperature button to alter selection, then press enter.
no rd1	Optional water reuse drain valve number 1. Press temperature button to alter selection, then press enter.
no rd2	Optional water reuse drain valve number 2. Press temperature button to alter selection, then press enter.

Table 1 (continued)

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Table 1 (continued)

HEAtSYS	Cannot be altered. Press enter. All machines are capable of taking advantage of the built in "Temperature Controlled Water Fill" feature of the PS40. This mixes hot and cold water to best achieve programmed temperature. Machines with supplemental steam or electric heating can also utilize this feature. Press enter. **NOTE: If no hot water inlet valves were selected earlier in preprogramming or configuration process, computer will default to "HEAt" setting and "HEAtSYS" will not be displayed.**
HEAt	Water inlet and supplemental heating without using "Temperature Controlled Water Fill" feature. Press temperature to alter selection, then press enter.
HEAt-Nod	Water inlet and supplemental heating using "Temperature Controlled Water Fill" feature. Press temperature button to alter selection, then press enter.
Nod	Water inlet only using "Temperature Controlled Water Fill" feature. Press temperature button to alter selection, then press enter.
HECo	If "HEAt" or "HEAt-Nod" were chosen, utilize this feature to make program time pause until programmed temperature is achieved. Press temperature button to alter selection, then press enter.
GEntlE	If "HEAt" or "HEAt-Nod" were chosen, utilize this feature to make machine run in "Gentle Action" (agitate 3 seconds, pause for 12 seconds) until programmed temperature is achieved. This will decrease amount of time required to heat water to programmed temperature. Press temperature button to alter selection, then press enter. **NOTE: If "Nod" was selected, "HECo" and "GentlE" will not be displayed.**
t *C	To change temperature displayed as Celsius or Fahrenheit, press temperature button to alter selection, then press enter.

Table 1 (continued)

Table 1 (continued)

SoAP	To program liquid supply outputs, press temperature button to alter your selection, then press enter. **NOTE: If "noSoAP" was selected, all soap options will be bypassed and "Add" option will be displayed.**
SoAP. 1	To program liquid supply output number 1, press temperature button to alter selection, then press enter.
SoAP. 2	To program liquid supply output number 2, press temperature button to alter selection, then press enter.
SoAP. 3	To program liquid supply output number 3, press temperature button to alter selection, then press enter.
SoAP. 4	To program liquid supply output number 4, press temperature button to alter selection, then press enter.
SoAP. 5	To program liquid supply output number 5, press temperature button to alter selection, then press enter.
SoAP. 6	To program liquid supply output number 6, press temperature button to alter selection, then press enter.
no.5iGnAL	**NOTE: Soap 7-12 not available in all models. Refer to position 12 in model number. A 2, 6 or 12 indicates 12 signals** To assign liquid supply output number 6 to activate an external signaling device rather than using it for a liquid supply output, press temperature button to alter selection, then press enter. **NOTE: Choosing this signal will put the signal at the end of the step it is programmed in.**
SoAP. 7	To program optional liquid supply output number 7 (if machine is equipped), press temperature button to alter selection, then press enter.
SoAP. 8	To program optional liquid supply output number 8 (if machine is equipped), press temperature button to alter selection, then press enter.

Table 1 (continued)

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Table 1 (continued)

SoAP. 9	To program optional liquid supply output number 9 (if machine is equipped), press temperature button to alter selection, then press enter.
SoAP. 10	To program optional liquid supply output number 10 (if machine is equipped), press temperature button to alter selection, then press enter.
SoAP. 11	To program optional liquid supply output number 11 (if machine is equipped), press the temperature button to alter selection, then press enter.
SoAP. 12	To program optional liquid supply output number 12 (if machine is equipped), press temperature button to alter selection, then press enter.
Add	Allows one to program a cool down, a timer stop or a soak cycle. Press temperature button to alter selection, then press enter. Changing to “no Add” removes this capability.
iSt.Lt.00	Input number of times machine should attempt an intermediate extract in the event that an out of balance situation occurs. A value of 5 is recommended. Press enter.
ESt.Lt.00	Input number of times machine should attempt a final extract in the event that an out of balance situation occurs. A value of 10 is recommended. Press enter.
HYSt 0	Input number of degrees temperature differential desired for supplemental heating and temperature controlled water. Typically, a value of 5°C / 9°F is used. Press enter.
bu	To have a buzzer sound at end of program, press temperature button to alter selection, then press enter.
SP GF	To program speed in RPM or G Force, press temperature button to alter selection, then press enter (G Force is recommended).
t	To be able to view temperature on display, press temperature button to alter selection.

Table 1 (continued)

Table 1 (continued)

ACCL	To enable rapid advance feature, press temperature button to alter selection, then press enter.
EnEr	Enables stop button. Press temperature button to alter selection, then press enter. “No EnEr” disables stop button.
ALArn	To be able to view various alarm codes on display in the event of a fault, press temperature button to alter selection, then press enter.
no.tiHoLd	To use timer hold feature for use in conjunction with liquid supply system, press temperature button to alter selection, then press enter. **NOTE: This feature is used in the event that a single solid dispenser is feeding two machines and the dispenser can only serve one machine at a time. If one machine is being served, the dispenser opens a busy relay connected to timer hold inputs. Then, if second machine needs chemicals, it pauses its program timer and waits until busy relay is cleared (goes closed) then proceeds with chemical signals. If there is no chemical system that uses this feature, select “no.t.iHoLd”. Otherwise there will be no chemical signals at all, even in test mode!**
dEFAuL	To use preset default values when programming water levels and speed. Press temperature button to alter selection, then press enter. **NOTE: If “no.dEFAuL” was selected, setup (pre-program) process is done and will return to “StArt”.**
AG.An00.0	Input default number of seconds for cylinder to rotate before stopping to reverse (12 seconds recommended). Press enter.
AG.Sn00.0	Input default number of seconds for cylinder to stop before rotating in opposite direction (3 seconds recommended). Press enter.

Table 1 (continued)

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Table 1 (continued)

dWASh. 00	Input default wash speed (in RPM) desired or press enter to select 0.8 G optimal wash speed for machine. Press enter.
LE.LoP0.00	Input default **low** water level desired in percentage or centimeters, depending on selection earlier in setup (pre-program) process (15% recommended). Press enter.
LE.NEP0.00	Input default **medium** water level desired in percentage or centimeters, depending on selection earlier in setup (pre-program) process (20% recommended). Press enter.
LE.HiP0.00	Input default **high** water level desired in percentage or centimeters, depending on selection earlier in setup (pre-program) process (25% recommended). Press enter.
SP.LoG.000	Input default **low** extract speed desired in RPM or G force, depending on selection earlier in setup (pre-program) process. Press enter.
SP.NEG.000	Input default **medium** extract speed desired in RPM or G force, depending on selection earlier in setup (pre-program) process. Press enter.
SP.HiG.000	Input default **high** extract speed desired in RPM or G force, depending on selection earlier in setup (pre-program) process. Press enter.

Table 1

NOTE: Preprogramming or configuration process is now completed. The display will now return to "StArt".

Use test 6 to check outputs. Follow test procedures below. Watch for leaks from inlet valves, hoses and soapbox.

Test Mode

In order to access "Test Mode", insure that "StArt" is on display, turn programming key to "Program" and very quickly press enter "217" on keypad. If "Prog 17" appears, keys were not pressed quickly enough. Press stop button to abort and repeat process. If "tESt" appears on display you are in "Test Mode". Once "tESt" appears on display, select test to perform and enter that number.

NOTE: If programming key is not turned to "Program" when this is attempted, "A0" will flash on display.

Test 1: Inputs

With "test" on the display, press 1 on keypad.

This test can be used to check all inputs to PS40 control.

inP.tHEr.o	Motor overload protector
inP.hEY.o	Programming switch
inP.LoCh.o	Door lock switch S2
inP.door.c	Door lock switch S1
inP.tiLt.o	Vibration switch
inP.SEnS.o	Proximity sensor
inP.Coi1.o	Inverter balance signal
inP.Coi2.o	Timer hold

Table 2

Display will indicate whether input contacts are open or closed using last character on right (o for open, c for closed). Pressing enter advances to next input. Press temperature button to go back to previous.

Example: "inP.tHEr.o" means motor overload protector is open. "inP.tHEr.c" means motor overload protector is closed. Also, activating or deactivating the input will change open and closed state to verify component operation.

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Test 2: Analog Reference

With “test” on the display, press 2 on the keypad.

Tests analog reference output voltage in comparison to cylinder speed.

NOTE: Because PS40 control does not try to compensate for speed in this mode, running RPM will not necessarily match commanded RPM – this is normal.

After selecting Test 2, display will show P000u0.00 Press enter.

Door will now lock. Press enter.

The cylinder will rotate to the left in wash speed and the RPM and analog output will be displayed: such as LO46u.39 (numbers on left indicate running RPM, numbers on right indicate analog voltage). Press Enter.

Display will show P000u0.00. Press enter.

Cylinder will rotate to right in wash speed and RPM and analog output will be displayed: such as r046u0.39. Press enter.

Cylinder will rotate in distribution speed and RPM and analog output will be displayed: such as d046u0.39. When drive SpartSpin signal turns on, “bs” will be displayed. Press enter.

Cylinder will rotate low extract speed and RPM and analog output will be displayed: such as L335u03.40. Press enter.

Cylinder will rotate to right in high speed extract and RPM and analog output will be displayed: such as H715u7.20. Press stop.

Cylinder will slow to a stop and door will unlock. Press stop.

Test 3: Not Available

Proceed to Test 4.

Test 4: Water Level Control Test

With “test” on the display, press 4 on the keypad.

Immediately after selecting “Test 4”, display will show current water level in machine.

Press green start button and drain will close and machine will begin taking in water. Water will continue to fill until small red stop button is pressed. Display will indicate water level as it increases. This will be quite useful in order to select water level settings for programming.

Example: “t4.LEV 00.0” indicates test 4 water level 00.0%.

Press stop again to leave this test.

Refer to ***PS40 Water Level Sensor Calibration Procedure*** section for more information.

Test 5: Temperature Sensor Test

With “test” on the display, press 5 on keypad.

Immediately after selecting “Test 5”, PS40 control will display current temperature in machine. Press stop button to end this test.

Example: “t5. 00.0” indicates test 5 temperature is 00.0 degrees.

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Test 6: Test of Outputs

With “test” on the display, press 6 on the keypad.

To go to next output, press enter.

To go back to previous output, press temperature button.

Pressing “1” turns on selected output.

Pressing “0” turns off selected output.

Press stop button to end this test.

Example: “out.dooR.o” indicates this output is turned off (door can be opened). “out.dooR.c” indicates this output is turned on (door is locked).

List of outputs

out.door.0	Door lock output is open.
out. rd1.0	Reuse drain 1 output is open.
out. rd2.0	Reuse drain 2 output is open.
out. rP.0	Recirculation pump output is open.
out. ir3.0	Reuse water inlet valve number 3 output is open.
out. ir2.0	Reuse water inlet valve number 2 output is open.
out.HEAt.0	Supplemental heating system output is open.
out. ir1.0	Reuse water inlet valve number 1 output is open.
out.iFLu.0	Flush valve i9 output is open.
out. Hot.0	Hot water inlet valve output is open.
out. Col.0	Cold water inlet valve number output is open.
out. i.6.0	Inlet valve number i6 output is open.
out. i.5.0	Inlet valve number i5 output is open.
out. i.4.0	Inlet valve number i4 output is open.
out. i.3.0	Inlet valve number i3 output is open.
out. i.2.0	Inlet valve number i2 output is open.
out. i.1.0	Inlet valve number i1 output is open.
out.So.1.0	Liquid supply number 1 output is open.
out.So.2.0	Liquid supply number 2 output is open.
out.So.3.0	Liquid supply number 3 output is open.

Table 3 (continued)

out.So.4.0	Liquid supply number 4 output is open.
out.So.5.0	Liquid supply number 5 output is open.
out.So.6.0	Liquid supply number 6 output is open.
out.So.7.0	Liquid supply number 7 output is open.
out.So.8.0	Liquid supply number 8 output is open.
out.So.9.0	Liquid supply number 9 output is open.
outSo.10.0	Liquid supply number 10 output is open.
outSo.11.0	Liquid supply number 11 output is open.
outSo.12.0	Liquid supply number 12 output is open.
outDrA.1.0	Drain valve number 1 output is open.
outDrA.2.0	Drain valve number 2 output is open.

Table 3

Test 7: Keyboard Test

With “test” on the display, press 7 on the keypad.

Immediately after selecting this test “t8. - - “ will appear on display. The corresponding display for each key pressed on keypad should be shown on display. To end this test, press small red stop button.

Ram Reset

Should it be necessary to erase all programming from PS40’s memory, use this procedure.

Example: Change of chemical suppliers, where deletion and reprogramming of all programs is required, or corrupted memory.

While “Test” is on display, press “0”. “CodE” will now be shown on display. Very quickly, press “753”.

Wait a few seconds for display to change, then cycle power to machine.

Everything from memory has been erased and machine must be setup (pre-programmed) prior to operation.

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Programming

Overview Of Modes

Self Test Mode

When machine is powered up, the computer will proceed through a self-test and will show “ProM.3.10” and then “Good.3.10” temporarily on display. The last three digits of each indicate software version. Then “dAtA.XXXX” appears temporarily. This number will change each time a program is installed or modified. If all is good, display will then change to “StArt” indicating that machine is in operating mode and is ready to run.

Operating Mode

This is the mode in which the machine is normally operated. In order to access and run an existing program, enter program number on keypad, and then press start. Refer to ***Operating Mode*** section.

NOTE: If this is the first time that the PS40 has been powered up and it has not been set up, “A3” will appear on display. Press Enter to make it go away and proceed to Setup (Pre-Program) Mode section.

Programming Mode

This mode is used in order to install new programs or to alter previously installed programs. In order to access programming mode, insure that “StArt” is on display, turn programming key to “Program” and very quickly press “enter 455” on keypad. If “Prog 05” appears, keys were not pressed quickly enough. Press stop to abort and start over. If “ProGr” appears on display (flashing), you are in programming mode. Refer to ***Programming Mode*** section.

NOTE: If Programming key is not turned to “Program” when this is attempted, “A0” will appear on display indicating that program mode has been locked out.

Copy Mode

This function is used in order to copy entire programs and assign them new program numbers. This feature saves a lot of time and effort when creating similar programs with few changes. In order to access copy mode, insure that “StArt” is on display and turn programming key to “Program”. Very quickly press “enter 328” on keypad. If “Prog 08” appears, keys were not pressed quickly enough. Press stop to abort and start over. If “CoPY PrG” appears on display, you are in copy mode. Refer to ***Copy Mode*** section.

NOTE: If Programming key is not turned to “Program” when this is attempted, A0 will appear on display indicating that copy mode has been locked out.

Setup (Pre-program) Mode

NOTE: Do not modify any of PS40’s setup items unless necessary – some settings can make machine appear to be malfunctioning. Although all machines are preconfigured at the factory, some special features, such as chemical timer hold or temperature units (°C or °F), may need to be enabled or changed for a particular installation.

Refer to ***Setup (Pre-Program) Mode*** section.

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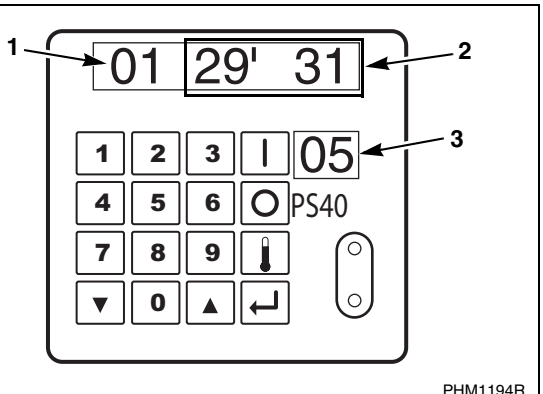
Operating Mode

Select and Run a Program

Make sure programming key switch is turned to “Run” position. With keypad, select a program to operate.

Press start. Program is now in operation.

Program Progress Indicators



1 Cycle Step Number
2 Cycle Time Remaining
3 Cycle Number

Figure 3

As program is progressing, program number and time remaining will be displayed (not including fill or heating times). Refer to *Figure 3* – the control is on step 1 of program 5 and there are 29 minutes and 31 seconds left on timer.

(Programming “LECo” and “HECo”, where applicable, determine whether time remaining includes fill and heat times.)

When “LECo” is programmed, when machine is filling with water, decimal point on far right of display will flash. Once level is satisfied, light will be continuous and time will count down.

When bath requires supplemental heating and “HECo” is programmed, decimal point second from right of display will flash and time will remain constant. Once programmed temperature is achieved, light will stay on.

When machine is draining, decimal point third from right on display will flash.

When program has completed, “Pxx. End” where xx is the cycle number last used will be displayed and buzzer will sound for 10 seconds. If a “Signal” was programmed it will sound at this point. Open door and display will revert to “StArt”.

Program Start Delay

After selecting a program to run, press and hold start button for approximately 5 seconds. “dELAY.00” appears on display. Input number of hours of delay for program to begin operating (1-99). Press start and display will show “dELAY.xx” where xx is the programmed delay time and decimal point will begin flashing. The number of hours remaining will be displayed while counting down and, during the last hour, the minutes remaining will be displayed. To cancel this operation, press stop.

Changing To Another Program

For the first 3 minutes after machine has started, it is possible to change selected program to a different program. To change to a different program simply input program number to change. The display will now show “P.00.StArt” (P.00 indicates new program number). If this is correct program number, press enter.

Temporary Program Alteration

Select a program number. Before starting program, press and hold temperature button. While holding temperature button in, press enter. Scroll through each program step using enter button and make desired changes. When finished, press start to begin program. The program will now run with temporary alterations.

Temperature and RPM Display

By pressing temperature button on keypad one time while program is in operation, the current temperature will be displayed.

Press temperature button again and programmed temperature will be displayed momentarily.

Press temperature button again and highest programmed temperature of program will be displayed momentarily.

Press temperature button again and cylinder speed will be displayed momentarily.

By pressing and holding temperature button for 3 seconds during any of the above, display will remain at that function until temperature button is pressed again.

Rapid Advance

Pushing and holding enter button on keypad can rapid advanced program through each program step. Rapid advance will stop at each drain and enter button must be released and pressed again in order to continue with rapid advance sequence.

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Rapid advance feature may be disabled by selecting "no ACCL" in setup (pre-program) process. Refer to ***Setup (Pre-Program) Mode*** section.

Programmed Stop

If an indefinite time stop (0 minutes) was programmed, the program will pause and wait for operator to restart program. Water will stay in machine and all cylinder movement will cease. Display will show "StoP". Program will not continue until start button is pressed.

If a programmed time stop was programmed (1-999 minutes), display will alternate between "StoPtiME" and remainder of programmed stop time. Time stop can also be interrupted by pressing start button.

NOTE: If a signal has been programmed, it will sound at beginning of "Programmed Stop Time". If a stop was programmed during "final spin/ extract", program will automatically resume after 20 minutes.

Stopping a Program

To terminate a program, press stop button on keypad. After 5 seconds machine will drain water and "oPEn door" will appear on display after approximately 30 seconds. Open door and "CloSE" will appear on display. Close door and display will flash program and time information where it was stopped. Press stop again. Display will show "End". Open door and display will return to "StArt".

Stop button may be disabled by selecting "no EnEr" in setup (pre-program) process. Refer to ***Setup (Pre-Program) Mode*** section.

Manually Adding Water

After program has been running for 3 minutes, add more water to machine by first pressing and releasing button number 1, then pressing and holding buttons "1-9" on keypad. After releasing button, water will shut off and water level will be displayed for 3 seconds. These buttons correspond to water inlet valves.

1. Cup 1
2. Cup 2 (optional)
3. Cup 3 (optional)
4. Cup 4 (optional)
5. Cup 5 (optional)
6. Cup 6 (not used on this machine)
7. Cold water inlet
8. Hot water inlet
9. Chemical flush

For machines equipped with water reuse inlet valves, access these by first pressing and releasing button number 2, then pressing button on keypad that corresponds with desired reuse water inlet valve (1 = water reuse valve number 1, etc.).

Manually Draining

After program has been running for 3 minutes, drain water by pressing "0" button on keypad, then pressing corresponding drain valve number on keypad (1 = Drain valve number 1, 2 = Drain valve number 2, etc.). Water level will be displayed while pressing these buttons, so water can be drained back down to a desired level.

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Manual Heating

After program has been running for 3 minutes, activate heating system by pressing and holding 4 button on keypad (if machine is equipped with an optional electrical or steam heating system). While button is pressed, temperature will be shown on display and supplemental heating system will be activated until button is released.

Manually Activating the Chemical Supply Signals

After program has been running for 3 minutes, activate liquid supply outputs “1-12” by first pressing and releasing “3” button on keypad and then pressing corresponding number on keypad for desired liquid supply output. Hold button in for desired output length, then release.

Display Total Operating Hours

Before machine has been started, quickly press “enter 223” and total hours machine has been run will be displayed for 5 seconds.

Program Memory Inventory

Before machine has been started, quickly press “enter 788” and display will show first program in machine and total number of steps in that program.

Example: “Prg01.08” means program 1 contains 8 steps.

After 1 second, next program in machine will be displayed and so forth.

After last program in machine is displayed, total number of free program steps will be displayed.

Press enter and display will return to “StArt”.

Programming Mode

In order to access programming mode, insure “StArt” is on display. Turn programming key to “Program” and very quickly press “enter 455” on keypad. If “Prog 05” appears, keys were not pressed quickly enough. Press stop to abort and start over. If “ProG” appears on display (flashing), you are in programming mode.

NOTE: If programming key is not turned to “Program” when this is attempted, “A0” will flash on display.

Creating a Program

ProG	(flashing) Entering programming mode. Press enter.
ProG 00	Enter program number to program or modify. Press enter.
00id 00	When entering program, display will be last step programmed. Press enter to go into last step or key in the desired step number and press enter. The first “00” indicates program number selected, “id 00” indicates program step or bath, (i.e., “02id 01” indicates program 2, step number 1). A program step, or bath, is a part of a wash program (prewash, main wash, rinse, etc.) and always ends with the option of a drain or extract. Enter program step number to be programmed. Press enter.
00. Cyt.	Cycle or program step time, not including fill, drain or extract time. (No user input required). Press enter.
t 00.00	Input desired agitation time for this step, in minutes and seconds. Press enter.
00.rotE	Cylinder action and pause times. (Dwell) (No user input required). Press enter.
AG.Force	Wash action type desired. To use a wash action other than what was preset in setup (pre-program) process as default, press enter. To use default wash actions preset in setup (pre-program) process, press temperature button. Display will now show AG.norMAL.
A example: A 12.0	Input number of seconds for cylinder to rotate before pausing to reverse direction. Press enter.
S example: S 03.0	Input number of seconds for cylinder to pause before turning in opposite direction. Press enter.
SP example: SP 42	Input desired wash speed in RPM. Press enter.

Table 4 (continued)

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A Word About Wash Speeds

Research has shown that for optimal mechanical action, a horizontal axis washer should turn at a speed corresponding to 0.8 G's – this speed is dependent on cylinder diameter. So as a machine gets bigger, proper wash speed gets slower. When running at 0.8 G's, the laundry in a machine will fall from about the 1 o'clock position to the 7 o'clock position (running counter clockwise – refer to *Figure 4*). For this machine, optimal wash speeds are:

Model	RPM
40 Pound	46
60 Pound	43
80 Pound	39
100 Pound	39
125 Pound	36
140 Pound	36
175 Pound	36

Table 5

If gentle action is needed, a very slow speed can be programmed (such as 10 RPM).

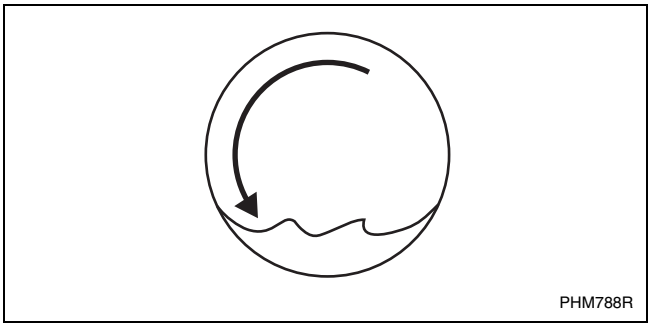

Figure 4

Table 4 (continued)

00.tENP	Temperature of this program step or bath. (No user input required). Press enter.
°F 000	Input temperature desired for this program step or bath. If no temperature control is desired for this bath, select 033. This will allow you to specify which main fill valves are to open. Press enter. **NOTE: The next step will be determined by "HEAtSYS" option chosen in setup (pre-program) mode.** If "HEAt-nod" was chosen in setup (pre-program), select from: • "HEAt" (supplemental heating without temperature controlled water inlets). If this option is chosen, pressing enter transfers to "no HECo" or "00. SE-i". Pressing temperature button transfers to "nod". • "HEAt-Nod" (temperature controlled water inlets with supplemental heating). Pressing enter transfers to "no HECo" or "00. SE-i". Pressing temperature button transfers back to "HEAt" • "nod" (temperature controlled water inlets without supplemental heating). Pressing enter transfers to "00. SE-i". Pressing temperature button transfers to "HEAt-nod". If "HEAt" was chosen during preprogramming or configuration, display will automatically go to "no HECo" or "00. SE-i". If "nod" was chosen during preprogramming or configuration, display will automatically go to "XX. SE-i".
no HECo	If "HECo" is selected, program will stop until programmed temperature is reached. Press temperature button to alter selection. Press enter.
t 00.00	Input time of program step where program will stop until programmed temperature is reached (use "0" for beginning of program step). Press enter.

Table 4 (continued)

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Table 4 (continued)

noGEntLE	If selected, cylinder will operate in gentle action mode until programmed temperature is reached. Press temperature to alter selection. Press enter.
00. SE-I	Water inlet selection. Inlets displayed in this section will be determined by settings in setup (pre-program) process. (No user input required). Press enter.
no i.1	Powdered supply compartment number 1. Press temperature to alter selection, then press enter.
no i.2	Powdered supply compartment number 2. Press temperature to alter selection, then press enter.
no i.3	Powdered supply compartment number 3. Press temperature to alter selection, then press enter.
no i.4	Powdered supply compartment number 4. Press temperature to alter selection, then press enter.
no i.5	Powdered supply compartment number 5. Press temperature to alter selection, then press enter.
noi.CoLd	Main cold water inlet fill valve. Press temperature to alter selection, then press enter. **NOTE: If not altered there is no fill or flush of supply line hose.**
no i.Hot	Main cold water inlet fill valve. Press temperature to alter selection, then press enter. **NOTE: If not altered there is no fill or flush of supply line hose.**
noiFLuSH	(Or no.iHArd) (No user input required). Press enter.
00.SE-LE	Water level selection. (No user input required). Press enter.
LE.Force	Water level desired. To use a water level other than what was preset in setup (pre-program) process as defaults, press enter. Input desired water level (LE. 000) in percentage or millimeters depending on selection made during setup (pre-program) process and press enter. To use default water levels preset in setup (pre-program) process, press temperature to toggle through water level selections, then press enter.

Table 4 (continued)

Table 4 (continued)

no LE.Co	Level control. To make program time pause until a water level is achieved, press temperature to alter selection, then press enter. If “no LE.Co” is selected, transfer to “no SoAP”.
LESP 000	Input water level when program time should resume. Press enter. If a default water level (low, med, or high) was programmed, enter “99” and press enter twice. The PS40 will automatically select a number corresponding to water level.

Table 4 (continued)

A Word About Water Levels

All machines are setup at factory to measure water levels in % (percent). 0% is bottom of cylinder, 50% is half way up cylinder back and so on. This is done because, for example, a 10% water level will give same performance on a 60 pound model as a 140 pound model, whereas a 10 inch (254 mm) water level will not give same performance on the two machines. If programs are transferred from a 60 pound model to a 140 pound model with inch based water levels all water levels in the programs would have to be adjusted. If programs have % based water levels they will work the same in any size machine with no modification.

Table 4 (continued)

no SoAP	To utilize 1 or more liquid supply outputs during this step, press temperature to alter selection, then press enter. If “no SoAP” was chosen, “no Add” will be displayed. **NOTE: The number of liquid supply outputs available will be determined by equipment options chosen during setup (pre-program) process.**
no So1	Liquid supply output signal number 1. Use temperature to alter selection. Press enter. If “no So1” was selected, the next available liquid supply output will be shown. **NOTE: Next step will be determined by “SoAP” option chosen during setup (pre-program) process.** If “no SoAP” was chosen, “no Add” will be displayed. If “ SoAP” was chosen, “SoAP” (or “no SoAP”) will be displayed.
t1. 000	Input number of seconds for this liquid supply signal. Press enter.

Table 4 (continued)

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Table 4 (continued)

no So2	Liquid supply output signal number 2. Use temperature to alter selection. Press enter. If “no So2” was selected, the next available liquid supply output will be shown.
t2. 000	Input number of seconds for this liquid supply signal. Press enter.
no So3	Liquid supply output signal number 3. Use temperature to alter selection. Press enter. If “no So3” was selected, the next available liquid supply output will be displayed.
t3. 000	Input number of seconds for this liquid supply signal. Press enter.
no So4	Liquid supply output signal number 4. Use temperature to alter selection. Press enter. If “no So4” was selected, the next available liquid supply output will be displayed.
t4. 000	Input number of seconds for this liquid supply signal. Press enter.
no So5	Liquid supply output signal number 5. Use temperature to alter selection. Press enter. If “no So5” was selected, the next available liquid supply output will be displayed.
t5. 000	Input number of seconds for this liquid supply signal. Press enter.
no So6	Liquid supply output signal number 6. Use temperature to alter selection. Press enter. If “no So6” was selected, the next available liquid supply output will be displayed.
t6. 000	Input number of seconds for this liquid supply signal. Press enter.
no So7	Liquid supply output signal number 7. Use temperature to alter selection. Press enter. If “no So7” was selected, the next available liquid supply output will be displayed.
T7. 000	Input number of seconds for this liquid supply signal. Press enter.
no So8	Liquid supply output signal number 8. Use temperature to alter selection. Press enter. If “no So8” was selected, the next available liquid supply output will be displayed.

Table 4 (continued)

Table 4 (continued)

T8. 000	Input number of seconds for this liquid supply signal. Press enter.
no So9	Liquid supply output signal number 9. Use temperature to alter selection. Press enter. If “no So9” was selected, the next available liquid supply output will be displayed.
T9. 000	Input number of seconds for this liquid supply signal. Press enter.
no So10	Liquid supply output signal number 10. Use temperature to alter selection. Press enter. If “no So10” was selected, the next available liquid supply output will be displayed.
T10.000	Input number of seconds for this liquid supply signal. Press enter.
no So11	Liquid supply output signal number 11. Use temperature to alter selection. Press enter. If “no So11” was selected, the next available liquid supply output will be displayed.
T11.000	Input number of seconds for this liquid supply signal. Press enter.
no So12	Liquid supply output signal number 12. Use temperature to alter selection. Press enter. If “no So12” was selected, the next available liquid supply output will be displayed.
T12.000	Input number of seconds for this liquid supply signal. Press enter.
no Add	Choose “Add” option to insert a cool down cycle, program stop cycle or soak in this program step. Use temperature to alter selection. Press enter.
Cool	To insert a cool down cycle in this program step, use temperature to alter selection. Press enter.
Cdu\.000	Input highest cool down temperature desired in first increment. Press enter.
Cdu. 000	Input lowest cool down temperature desired in first increment. Press enter.
Cdn\.000	Input highest cool down temperature desired in last increment. Press enter.
Cdn. 000	Input lowest cool down temperature desired in last increment. Press enter.
StoP	To insert a program “stop” in this step, use temperature to alter selection. Press enter.
StoP.000	Input number of minutes (up to 999) that program stops. Press enter. If “SiGnAL” was selected during setup (pre-program) process, “SiGnA000” will be displayed.

Table 4 (continued)

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Table 4 (continued)

SoAH	To program a “soak” cycle during this step, use temperature to alter selection. Press enter.
SoAH.000	Input number of minutes (up to 999) for soak cycle to last. Press enter. If “SiGnAL” was selected during setup (pre-program) process, “SiGnA000” will be displayed.
SiGnA000	Input desired number of seconds for external signal output to be activated. Press enter.
SPin	For a “Spin/Extract” at end of this program step, use temperature to alter selection. Press enter. **NOTE: If “no SPin” is selected, “d1” will be displayed.**
Spit00.00	Input number of minutes and seconds for extract. Press enter.
SP.ForcE	Extract speed desired. To use an extract speed other than what was preset in setup (pre-program) process as defaults, press enter. Enter extract speed desired, in G-force or RPM depending on selection made during setup (pre-program) process. To use default extract speeds preset in setup (pre-program) process, press temperature. The display will now show “SP. Lo” for low speed. Press temperature and display will show “SP. NE” for medium speed. Press temperature and display will show “SP. Hi” for high speed. Press temperature and the display will show “smart” for SmartSpin. Press enter when selection is made.

Table 4 (continued)

A Word About Extract Speeds

To obtain same extract performance in different sized machines, extract speeds are commonly expressed in “G’s”. For example, a very large machine spinning at 500 RPM will remove more water than a small machine spinning at the same RPM. However, if a large machine spins at 80 G’s it will perform the same as a small machine spinning at 80 G’s. For this reason it is convenient to program extracts in G’s so when programs are transferred to machines of different sizes, the same extract results will be obtained.

NOTE: All washer-extractors rotate counter clockwise in extract.

A Word About SmartSpin

When SmartSpin is selected as extract mode, the machine uses a process to determine the amount that the cylinder is out of balance. The maximum safe spin speed for that load is then calculated, allowing the machine to spin as high as 300 G’s. This ground breaking feature is a powerful tool for processing goods like towels or sheets that need to be as dry as possible – more water is removed from goods at higher extract speeds so they spend less time in dryer and save operator money.

Table 4 (continued)

dI	Select from d1 (drain 1), d2 (drain 2), rd1 (reuse drain 1) and rd2 (reuse drain 2) depending on equipment options selected during setup (pre-program) process. Use temperature to alter selection. Press enter. If “no Spin” was selected the option of d0 (no drain) will be added and programming will proceed to “dt 000”.
00. dEt.	No user input required. Press enter.
td XXX	Input desired coast delay time before cylinder resumes wash action. Delay time starts when cylinder begins stopping. Press enter.
dt 000	Input number of seconds for machine to drain (30 to 40 seconds is recommended). Press enter.
dRAin	Select from dRAin (no movement), UASH (normal wash action), diSt (distribution speed) or JoLt (repeated 10 second low extract followed by a right and left tumble) to select cylinder movement while draining. Press temperature to alter selection. Press enter.
t=00.00	Display of total time for this program step (plus fill and heating). No user input required. Press enter.
FrEE 000	Free area left in RAM available for programming. No user input required. Press enter.
End	Programming for this formula is complete To program another step in this formula select “no End”. Use temperature button to alter selection. Press enter. **NOTE: If “no End” is selected “00.id 00” (the last two zeros would be the next step number in the program) will be displayed.**

Table 4 (continued)

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Table 4 (continued)

tu 000	Tumble (Shakeout). Input number of seconds for cylinder to tumble in wash speed before ending program and unlocking loading door. Press enter. If SiGnAL was selected during setup (pre-program) “SiGnA000” will be displayed.
SiGnA000	Input desired number of seconds for external signal output to be activated (if feature was enabled in setup [pre-program] process). Press enter.

Table 4

The display will now read “dAtA.0000” and then change to “StArt”, exiting program mode.

Inserting/Deleting a Program Step

To insert or delete a program step, enter “Program Mode”.

To access programming mode, insure that “StArt” is on display, turn programming key to “Program” and very quickly press “enter 455” on keypad. If “Prog 05” appears, keys were not pressed quickly enough. Press stop to abort and start over. If “ProGr” appears on display (flashing), programming mode is activated.

NOTE: If programming key is not turned to “Program” when this is attempted, “A0” will flash on display.

ProG	Entering programming mode. Press enter.
ProG 00	Enter program number to program or modify. Press enter.

Table 6

To Insert a Step

00.id 00	Enter “Program Step” where “New Program Step” will be inserted. Press enter. Now press start.
00 inS	Press temperature. A new program step has been inserted.

Table 7

Example: 03.id 04

Enter “Program Step” where “New Program Step” will be inserted.

Press enter (program number 3 is selected, step number 4).

Press start. “04 inS” appears on display.

Press enter. A new program step has been inserted in place of program step number 4 and old program step number 4 has been moved to program step number 5.

To Delete a Step

00.id 00	Enter “Program Step” to delete. Press enter. Now press stop.
00 dEL	Press enter. The program step has been deleted.

Table 8

Example: 03.id 04

Enter “Program Step” to delete.

Press enter (program number 3 is selected, step number 4).

Press stop. “04 dEL” appears on display.

Press enter. Program step number 4 has been deleted and program step number 5 has been moved into its place.

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Copy Mode

In order to access copy mode, insure StArt is on display and turn programming key to “Program”. Very quickly press “enter 328” on keypad. If “Prog 08” appears, keys were not pressed quickly enough. Press stop to abort and start over. If “CoPY PrG” appears on display, copy mode is displayed.

NOTE: If programming key is not turned to “Program” when this is attempted, “A0” will appear on display indicating copy mode has been locked out.

Copy Prg	Press enter.
Source.00	Enter two-digit source program number – this is the program number to make a copy of. Press enter.
Dest .00	Enter two digit destination program number – this is the program number to store copy in. Press enter.
01....02	The PS40 will display “source . . . . destination” program numbers to confirm operation. Press enter to complete operation or stop to abort operation.

Table 9

Example: To copy program 41 to program 5, do the following. Enter copy mode as explained above.

Source.00: Enter source program number (41) on keypad.

Source.41: Press enter.

Dest .00: Enter destination program number (05) on keypad.

Dest .05: Press enter.

41....05: Press enter to confirm operation.

Start: The display will return to start prompt. The program has been copied.

PS40 Water Level Sensor Calibration Procedure

1. Verify machine is properly installed. Check water supply and drain connections.
2. Power-up machine.
3. From start display, press “enter 217” to enter test mode. These buttons must be pressed in rapid succession. If not entered quickly, machine will return to start or prog display and it will be necessary to press stop and try again.
4. From test display, press “4” for water level sensor calibration.
5. Close door.
6. Press “0” to zero sensor. Wait for drain to open, display to go to zero and drain to close.
7. Press start to start filling shell with water.
8. When water reaches center of basket back, press stop to stop filling.
9. Wait a few minutes for excess water to drain out through overflow hose and level to stabilize.
10. Press “1” to access fill measurement.
11. 40 Pound Model – Press “343” enter to enter correct water level (343 mm).

    60 Pound Model – Press “394” enter to enter correct water level (394 mm).

    80 Pound Model – Press “470” enter to enter correct water level (470 mm).

    100 Pound Model – Press “470” enter to enter correct water level (470 mm).

    125 Pound Model – Press “510” enter to enter correct water level (510 mm).

    140 Pound Model – Press “546” enter to enter correct water level (546 mm).

    175 Pound Model – Press “586” enter to enter correct water level (586 mm).
12. Press stop to drain machine.
13. Press stop to exit test mode.
14. Procedure is complete.

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PS40 Diagnostics

Alarm Codes

Alarm codes are used to alert operator to problems with machine's performance. However, because alarms do not indicate safety problems, they do not interrupt operation of machine. When an alarm occurs, control will flash code on program number display to get operator's attention. Operator should make note of this code and report it to a technician so issue can be resolved. Note that all alarm codes are composed of the letter "A" followed by a code reference number.

Code	Description
A0	Program key was in wrong position when trying to access programming mode. Press enter to clear.
A2	Program selected does not exist. Press enter to clear.
A3	Machine has not been setup (pre-program) or memory has been lost. Refer to ***Programming*** section. Press enter to clear.
A4	Programmed water level was not achieved within 15 minutes. Press enter to clear.
A5	Programmed temperature for supplemental heating was not achieved within 60 minutes. Press enter to clear.
A6	Temperature in cylinder is unsafe at end of a program (greater than 150°F [65°C]). Wait until load cools to prevent burns. Press enter to clear.
A7	There is water remaining in machine at end of program. Press enter to clear.
A8	Temperature sensor is not working properly. Press enter to clear.
A9	Rear electrical enclosure too high. Clean cooling fan filter. Press enter to clear.
Ab	There is already water in the machine when a program was started (check for leaking water valves). Press enter to clear.
Ac	There was water remaining in machine after 3 minutes of draining (check for clogged drain). Press enter to clear.
Ad	Machine is not running at correct speed or speed sensor is damaged. Press enter to clear. Anything that stops analog voltage or directional voltage could cause alarm (i.e. loose door switch connections).
AG	Final extract was at a lower than programmed speed (fixed mount machines only). Load could not be balanced for a fixed speed spin.
AH	Final extract was skipped (free standing machines only).

Table 10

Fault Codes

Fault codes indicate safety issues, which may cause operator injury or property loss. Thus, when an alarm occurs, control will lock out machine's operation until power has been cycled and a technician corrects problem. Note that all fault codes are composed of letter "F" followed by a code reference number.

Code	Description
F1	Invalid control configuration or corrupted PS40 firmware. Load a new version or call for service.
F5	Door open switch was tripped during program. Door lock mechanism is malfunctioning. This problem must be corrected and power to machine cycled in order to clear it.
F6	Door locked switch was tripped during program. Door lock mechanism is malfunctioning. Problem must be corrected and power to machine cycled in order to clear it.
FA	Vibration switch is tripped at beginning of program. Correct problem and cycle power to clear.
E	Check keypad.

Table 11

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Programming Tips

- Avoid using spins after wash program segments. This can cause suspended soil to be redeposited in fabric before it can be rinsed out.
- For optimum agitation, program wash speed at 0.8 G's (ex. 42 RPM in 60 pound, 38 RPM in 80/100 pound) for machine. This will give best drop in cylinder and best soil removal.
- Use SmartSpin in programs for processing cotton and other sturdy goods that can take higher extract forces. This will reduce drying time and energy consumption.
- High spin speeds (> 80 G's) can set wrinkles in goods made of Visa and some other synthetic materials.
- For processing non-porous rubber mats, try a long "jolt" drain period instead of a final extract. Jolt routine alternates short spin and tumble segments and will effectively remove water from non-porous goods because they are continuously rearranged, freeing water trapped in pockets.

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Standard Programs

Index	
Program 0	Rinse and Spin
Program 1	Cold Wash
Program 2	Warm Wash
Program 3	Hot Wash
Program 4	Perm Press
Program 5	Cold Gentle
Program 6	Warm Gentle
Program 7	Rubber Mats
Program 8	Soak
Program 9	Starch

Table 12

Dispenser Assignments	
Cup1	Break 1 / Starch
Cup2	Break 2
Cup3	
Cup4	
Cup5	Sour / Softner

Table 13

Inlet Assignments	
1	Cup 1
2	Cup 2
3	Cup 3
4	Cup 4
5	Cup 5
6	
7	Cold Water
8	Hot Water
9	Chemical Injection Flush

Table 14

Chemical Signal Assignments	
Chem 1	Break 1
Chem 2	Break 2
Chem 3	Sour / Softner
Chem 4	Starch
Chem 5	
Chem 6	

Table 15

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Program 0 – Rinse and Spin

		Rinse and Spin					
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Wash Time	Cyt ti	3.00					
Rotation	rotE	normal					
Rotation Action Time	rotE A						
Rotation Stop Time	rotE S						
Speed	rotE SP						
Temperature	teMP F	33					
Supply Flush 1	SE-i i1	/					
Supply Flush 2	i2	/					
Supply Flush 3	i3	/					
Supply Flush 4	i4	/					
Supply Flush 5	i5	/					
Cold Water Inlet	iCold	x					
Hot Water Inlet	iHot	x					
Flush	Flush	/					
Level Type	SE-LE LE	Hi					
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P	20					
Chem 1	SoAP t1	/					
Chem 2	SoAP t2	/					
Chem 3	SoAP t3	/					
Chem 4	SoAP t4	/					
Chem 5	SoAP t5	/					
Chem 6	SoAP t6	/					
Additional	Add	no add					
Cool Down To Cdu	Add Cool CduI						
Highest Cd Temp	Add Cool Cdu						
Cool Down To Cdn	Add Cool CdnI						
Lowest Cd Temp	Add Cool Cdn						
Additional Stop Time	Add Stop t						
Additional Soak Time	Add SoaH t						
Spin Time	Spin SP. T	5.00					
Spin Type		Smart					
Spin Speed GF	SP						

Table 16 (continued)

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Program 0 – Rinse and Spin

Table 16 (continued)

		Rinse and Spin					
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Drain	drain	d1					
Drain Movement	drain						
Drain Time	drain t						
Spin Delay Time	Spin dEti td	005					
Total Time	t=	8.05					
Tumble	tu	030					

Table 16

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Program 1 – Cold Wash

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Wash Time	Cyt ti	5.00	10.00	2.00	2.00	4.00	
Rotation	rotE	normal	normal	normal	normal	normal	
Rotation Action Time	rotE A						
Rotation Stop Time	rotE S						
Speed	rotE SP						
Temperature	teMP F	33	33	33	33	33	
Supply Flush 1	SE-i i1	X	/	/	/	/	
Supply Flush 2	i2	/	X	/	/	/	
Supply Flush 3	i3	/	/	/	/	/	
Supply Flush 4	i4	/	/	/	/	/	
Supply Flush 5	i5	/	/	/	/	X	
Cold Water Inlet	iCold	X	X	X	X	X	
Hot Water Inlet	iHot	/	/	/	/	/	
Flush	Flush	X	X	X	X	X	
Level Type	SE-LE LE	Hi	Lo	Med	Med	Med	
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P	20	9	13	13	13	
Chem 1	SoAP t1	030	/	/	/	/	
Chem 2	SoAP t2	/	030	/	/	/	
Chem 3	SoAP t3	/	/	/	/	030	
Chem 4	SoAP t4	/	/	/	/	/	
Chem 5	SoAP t5	/	/	/	/	/	
Chem 6	SoAP t6	/	/	/	/	/	
Additional	Add	no add					
Additional	Add	no add	no add	no add	no add	no add	
Cool Down To Cdu	Add Cool CduI						
Highest Cd Temp	Add Cool Cdu						
Cool Down To Cdu	Add Cool CduI						
Lowest Cd Temp	Add Cool Cdn						
Additional Stop Time	Add Stop t						
Additional Soak Time	Add SoaH t						

Table 17 (continued)

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Program 1 – Cold Wash

Table 17 (continued)

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Spin Time	Spin SP. T	no spin	no spin	:30	:30	5.00	
Spin Type				Lo	Lo	Smart	
Spin Speed GF	SP						
Drain	drain	d1	d1	d1	d1	d1	
Drain Movement	drain	dist	dist				
Drain Time	drain t	45	45				
Spin Delay Time	Spin dEti td			005	005	005	
Total Time	t=	5.45	10.45	2.35	2.35	9.05	
Tumble	tu					030	

Table 17

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Program 2 – Warm Wash

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Wash Time	Cyt ti	5.00	10.00	2.00	2.00	4.00	
Rotation	rotE	normal	normal	normal	normal	normal	
Rotation Action Time	rotE A						
Rotation Stop Time	rotE S						
Speed	rotE SP						
Temperature	teMP F	33	33	33	33	33	
Supply Flush 1	SE-i i1	X	/	/	/	/	
Supply Flush 2	i2	/	X	/	/	/	
Supply Flush 3	i3	/	/	/	/	/	
Supply Flush 4	i4	/	/	/	/	/	
Supply Flush 5	i5	/	/	/	/	X	
Cold Water Inlet	iCold	X	X	X	X	X	
Hot Water Inlet	iHot	X	X	/	/	/	
Flush	Flush	X	X	X	X	X	
Level Type	SE-LE LE	Hi	Lo	Med	Med	Med	
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P	20	9	13	13	13	
Chem 1	SoAP t1	030	/	/	/	/	
Chem 2	SoAP t2	/	030	/	/	/	
Chem 3	SoAP t3	/	/	/	/	030	
Chem 4	SoAP t4	/	/	/	/	/	
Chem 5	SoAP t5	/	/	/	/	/	
Chem 6	SoAP t6	/	/	/	/	/	
Additional	Add	no add	no add	no add	no add	no add	
Cool Down To Cdu	Add Cool CduI						
Highest Cd Temp	Add Cool Cdu						
Cool Down To Cdn	Add Cool CdnI						
Lowest Cd Temp	Add Cool Cdn						
Additional Stop Time	Add StoP t						
Additional Soak Time	Add SoAH t						
Spin Time	SPin SP. T	no spin	no spin	:30	:30	5.00	
Spin Type				Lo	Lo	Smart	
Spin Speed GF	SP						

Table 18 (continued)

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Program 2 – Warm Wash

Table 18 (continued)

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Drain	drain	d1	d1	d1	d1	d1	
Drain Movement	drain	dist	dist				
Drain Time	drain	45	45				
Spin Delay Time	Spin dEti td			005	005	005	
Total Time	t=	5.45	10.45	2.35	2.35	9.05	
Tumble	tu					030	

Table 18

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Program 3 – Hot Wash

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Wash Time	Cyt ti	5.00	10.00	2.00	2.00	4.00	
Rotation	rotE	normal	normal	normal	normal	normal	
Rotation Action Time	rotE A						
Rotation Stop Time	rotE S						
Speed	rotE SP						
Temperature	teMP F	33	33	33	33	33	
Supply Flush 1	SE-i i1	X	/	/	/	/	
Supply Flush 2	i2	/	X	/	/	/	
Supply Flush 3	i3	/	/	/	/	/	
Supply Flush 4	i4	/	/	/	/	/	
Supply Flush 5	i5	/	/	/	/	X	
Cold Water Inlet	iCold	/	/	X	X	X	
Hot Water Inlet	iHot	X	X	X	/	/	
Flush	Flush	X	X	X	X	X	
Level Type	SE-LE LE	Hi	Lo	Med	Med	Med	
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P	20	9	13	13	13	
Chem 1	SoAP t1	030	/	/	/	/	
Chem 2	SoAP t2	/	030	/	/	/	
Chem 3	SoAP t3	/	/	/	/	030	
Chem 4	SoAP t4	/	/	/	/	/	
Chem 5	SoAP t5	/	/	/	/	/	
Chem 6	SoAP t6	/	/	/	/	/	
Additional	Add	no add	no add	no add	no add	no add	
Cool Down To Cdu	Add Cool CduI						
Highest Cd Temp	Add Cool Cdu						
Cool Down To Cdn	Add Cool CdnI						
Lowest Cd Temp	Add Cool Cdn						
Additional Stop Time	Add Stop t						
Additional Soak Time	Add SoaH t						
Spin Time	Spin SP. T	no spin	no spin	:30	:30	5.00	
Spin Type				Lo	Lo	Smart	
Spin Speed GF	SP						

Table 19 (continued)

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Program 3 – Hot Wash

Table 19 (continued)

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Drain	drain	d1	d1	d1	d1	d1	
Drain Movement	drain	dist	dist				
Drain Time	drain t	45	45				
Spin Delay Time	Spin dEti td			005	005	005	
Total Time	t=	5.45	10.45	2.35	2.35	9.05	
Tumble	tu					030	

Table 19

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Program 4 – Perm Press

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Wash Time	Cyt ti	5.00	10.00	2.00	2.00	4.00	
Rotation	rotE	normal	normal	normal	normal	normal	
Rotation Action Time	rotE A						
Rotation Stop Tme	rotE S						
Speed	rotE SP						
Temperature	teMP F	33	33	33	33	33	
Supply Flush 1	SE-i i1	X	/	/	/	/	
Supply Flush 2	i2	/	X	/	/	/	
Supply Flush 3	i3	/	/	/	/	/	
Supply Flush 4	i4	/	/	/	/	/	
Supply Flush 5	i5	/	/	/	/	X	
Cold Water Inlet	iCold	/	/	/	/	X	
Hot Water Inlet	iHot	X	X	X	X	/	
Flush	Flush	X	X	X	X	X	
Level Type	SE-LE LE	Hi	Lo	Med	Med	Med	
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P	20	9	13	13	13	
Chem 1	SoAP t1	030	/	/	/	/	
Chem 2	SoAP t2	/	030	/	/	/	
Chem 3	SoAP t3	/	/	/	/	030	
Chem 4	SoAP t4	/	/	/	/	/	
Chem 5	SoAP t5	/	/	/	/	/	
Chem 6	SoAP t6	/	/	/	/	/	
Additional	Add	no add	no add	no add	Cool down	no add	
Cool Down To Cdu	Add Cool CduI				2		
Highest Cd Temp	Add Cool Cdu				105		
Cool Down To Cdn	Add Cool CdnI				2		
Lowest Cd Temp	Add Cool Cdn				105		
Additional Stop Time	Add Stop t						
Additional Soak Time	Add SoaH t						
Spin Time	Spin SP. T	no spin	no spin	:30	:30	5.00	
Spin Type				Lo	Lo	Smart	
Spin Speed GF	SP						

Table 20 (continued)

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Program 4 – Perm Press

Table 20 (continued)

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Drain	drain	d1	d1	d1	d1	d1	
Drain Movement	drain	dist	dist				
Drain Time	drain t	45	45				
Spin Delay Time	Spin dEti td			005	005	005	
Total Time	t=	5.45	10.45	2.35	2.35	9.05	
Tumble	tu					030	

Table 20

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Program 5 – Cold Gentle

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Wash Time	Cyt ti	3.00	8.00	2.00	2.00	4.00	
Rotation	rotE	Force	Force	Force	Force	Force	
Rotation Action Time	rotE A	4.0	4.0	4.0	4.0	4.0	
Rotation Stop Tme	rotE S	16.0	16.0	16.0	16.0	16.0	
Speed	rotE SP	30	30	30	30	30	
Temperature	teMP F	80	80	80	80	80	
Supply Flush 1	SE-i i1	X	/	/	/	/	
Supply Flush 2	i2	/	X	/	/	/	
Supply Flush 3	i3	/	/	/	/	/	
Supply Flush 4	i4	/	/	/	/	/	
Supply Flush 5	i5	/	/	/	/	X	
Cold Water Inlet	iCold	X	X	X	X	X	
Hot Water Inlet	iHot	X	X	X	X	X	
Flush	Flush	X	X	X	X	X	
Level Type	SE-LE LE	Hi	Lo	Med	Med	Med	
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P	20	9	13	13	13	
Chem 1	SoAP t1	030	/	/	/	/	
Chem 2	SoAP t2	/	030	/	/	/	
Chem 3	SoAP t3	/	/	/	/	030	
Chem 4	SoAP t4	/	/	/	/	/	
Chem 5	SoAP t5	/	/	/	/	/	
Chem 6	SoAP t6	/	/	/	/	/	
Additional	Add	no add	no add	no add	no add	no add	
Cool Down To Cdu	Add Cool CduI						
Highest Cd Temp	Add Cool Cdu						
Cool Down To Cdn	Add Cool CdnI						
Lowest Cd Temp	Add Cool Cdn						
Additional Stop Time	Add Stop t						
Additional Soak Time	Add SoaH t						
Spin Time	Spin SP. T	no spin	no spin	no spin	0.30	5.00	
Spin Type					Lo	Med	
Spin Speed GF	SP						

Table 21 (continued)

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Program 5 – Cold Gentle

Table 21 (continued)

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Drain	drain	d1	d1	d1	d1	d1	
Drain Movement	drain	dist	dist	dist			
Drain Time	drain t	45	45	45			
Spin Delay Time	Spin dEti td				005	005	
Total Time	t=	3.45	8.45	2.45	2.35	9.05	
Tumble	tu					030	

Table 21

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Program 6 – Warm Gentle

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Wash Time	Cyt ti	3.00	8.00	2.00	2.00	4.00	
Rotation	rotE	Force	Force	Force	Force	Force	
Rotation Action Time	rotE A	4.0	4.0	4.0	4.0	4.0	
Rotation Stop Tme	rotE S	16.0	16.0	16.0	16.0	16.0	
Speed	rotE SP	30	30	30	30	30	
Temperature	teMP F	110	110	110	110	110	
Supply Flush 1	SE-i i1	X	/	/	/	/	
Supply Flush 2	i2	/	X	/	/	/	
Supply Flush 3	i3	/	/	/	/	/	
Supply Flush 4	i4	/	/	/	/	/	
Supply Flush 5	i5	/	/	/	/	X	
Cold Water Inlet	iCold	X	X	X	X	X	
Hot Water Inlet	iHot	X	X	X	X	X	
Flush	Flush	X	X	X	X	X	
Level Type	SE-LE LE	Hi	Lo	Med	Med	Med	
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P	20	9	13	13	13	
Chem 1	SoAP t1	030	/	/	/	/	
Chem 2	SoAP t2	/	030	/	/	/	
Chem 3	SoAP t3	/	/	/	/	030	
Chem 4	SoAP t4	/	/	/	/	/	
Chem 5	SoAP t5	/	/	/	/	/	
Chem 6	SoAP t6	/	/	/	/	/	
Additional	Add	no add	no add	no add	no add	no add	
Cool Down To Cdu	Add Cool CduI						
Highest Cd Temp	Add Cool Cdu						
Cool Down To Cdn	Add Cool CdnI						
Lowest Cd Temp	Add Cool Cdn						
Additional Stop Time	Add Stop t						
Additional Soak Time	Add SoaH t						
Spin Time	Spin SP. T	no spin	no spin	no spin	0.30	5.00	
Spin Type					Lo	Med	
Spin Speed GF	SP						

Table 22 (continued)

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Program 6 – Warm Gentle

Table 22 (continued)

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Drain	drain	d1	d1	d1	d1	d1	
Drain Movement	drain	dist	dist	dist			
Drain Time	drain t	45	45	45			
Spin Delay Time	Spin dEti td				005	005	
Total Time	t=	3.45	8.45	2.45	2.35	9.05	
Tumble	tu					030	

Table 22

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Program 7– Rubber Mats

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse 3	Spin
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Wash Time	Cyt ti	5.00	10.00	2.00	2.00	4.00	0.00
Rotation	rotE	normal	normal	normal	normal	normal	
Rotation Action Time	rotE A						
Rotation Stop Tme	rotE S						
Speed	rotE SP						
Temperature	teMP F	33	33	33	33	33	
Supply Flush 1	SE-i i1	X	/	/	/	/	
Supply Flush 2	i2	/	X	/	/	/	
Supply Flush 3	i3	/	/	/	/	/	
Supply Flush 4	i4	/	/	/	/	/	
Supply Flush 5	i5	/	/	/	/	X	
Cold Water Inlet	iCold	X	X	X	X	X	
Hot Water Inlet	iHot	X	X	X	X	X	
Flush	Flush	X	X	X	X	X	
Level Type	SE-LE LE	Hi	Med	Hi	Hi	Hi	
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P	20	13	20	20	20	
Chem 1	SoAP t1	030	/	/	/	/	
Chem 2	SoAP t2	/	030	/	/	/	
Chem 3	SoAP t3	/	/	/	/	030	
Chem 4	SoAP t4	/	/	/	/	/	
Chem 5	SoAP t5	/	/	/	/	/	
Chem 6	SoAP t6	/	/	/	/	/	
Additional	Add	no add	no add	no add	no add	no add	
Cool Down To Cdu	Add Cool CduI						
Highest Cd Temp	Add Cool Cdu						
Cool Down To Cdn	Add Cool CdnI						
Lowest Cd Temp	Add Cool Cdn						
Additional Stop Time	Add Stop t						
Additional Soak Time	Add SoaH t						
Spin Time	Spin SP. T	no spin	no spin	no spin	no spin	no spin	3.00
Spin Type							Lo
Spin Speed GF	SP						

Table 23 (continued)

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Program 7– Rubber Mats

Table 23 (continued)

		Prewash	Wash1	Rinse 1	Rinse 2	Rinse 3	Spin
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Drain	drain	d1	d1	d1	d1	d1	d1
Drain Movement	drain	wash	wash 1	jolt	jolt	jolt	
Drain Time	drain t	30	30	30	60	180	
Spin Delay Time	Spin dEti td	005					005
Total Time	t=	5.30	10.30	2.30	3.00	7.00	3.50
Tumble	tu						030

Table 23

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Program 8 – Soak

		Prewash	Soak	Wash	Rinse 1	Rainse 2	Rinse and Spin
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Wash Time	Cyt ti	5.00	5.00	10.00	2.00	2.00	4.00
Rotation	rotE	normal	normal	normal	normal	normal	normal
Rotation Action Time	rotE A						
Rotation Stop Tme	rotE S						
Speed	rotE SP						
Temperature	teMP F	33	33	33	33	33	33
Supply Flush 1	SE-i i1	X	X	/	/	/	/
Supply Flush 2	i2	/	/	X	/	/	/
Supply Flush 3	i3	/	/	/	/	/	/
Supply Flush 4	i4	/	/	/	/	/	/
Supply Flush 5	i5	/	/	/	/	/	X
Cold Water Inlet	iCold	X	/	X	X	X	X
Hot Water Inlet	iHot	X	X	X	X	/	/
Flush	Flush	X	X	X	X	X	X
Level Type	SE-LE LE	Hi	Hi	Lo	Med	Med	Med
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P	20	20	9	13	13	13
Chem 1	SoAP t1	030	030	/	/	/	/
Chem 2	SoAP t2	/	/	030	/	/	/
Chem 3	SoAP t3	/	/	/	/	/	030
Chem 4	SoAP t4	/	/	/	/	/	/
Chem 5	SoAP t5	/	/	/	/	/	/
Chem 6	SoAP t6	/	/	/	/	/	/
Additional	Add	no add	Soah	no add	no add	no add	no add
Cool Down To Cdu	Add Cool CduI						
Highest Cd Temp	Add Cool Cdu						
Cool Down To Cdn	Add Cool CdnI						
Lowest Cd Temp	Add Cool Cdn						
Additional Stop Time	Add Stop t						
Additional Soak Time	Add SoaH t		600				
Spin Time	Spin SP. T	no spin	no spin	no spin	0.30	0.30	5.00
Spin Type					Lo	Lo	Smart
Spin Speed GF	SP						

Table 24 (continued)

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Program 8 – Soak

Table 24 (continued)

		Prewash	Soak	Wash	Rinse 1	Rainse 2	Rinse and Spin
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Drain	drain	d1	d1	d1	d1	d1	d1
Drain Movement	drain	dist	dist	dist			
Drain Time	drain t	45	45	45			
Spin Delay Time	Spin dEti td				005	005	005
Total Time	t=	5.45	605.45	10.45	2.35	2.35	9.05
Tumble	tu						030

Table 24

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Program 9 – Starch

Segment	id	1	2	3	4	5	6
Wash Time	Cyt ti	7.00					
Rotation	rotE	normal					
Rotation Action Time	rotE A						
Rotation Stop Tme	rotE S						
Speed	rotE SP						
Temperature	teMP F	33					
Supply Flush 1	SE-i i1	X					
Supply Flush 2	i2	/					
Supply Flush 3	i3	/					
Supply Flush 4	i4	/					
Supply Flush 5	i5	/					
Cold Water Inlet	iCold	X					
Hot Water Inlet	iHot	X					
Flush	Flush	X					
Level Type	SE-LE LE	Med					
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P	13					
Chem 1	SoAP t1	/					
Chem 2	SoAP t2	/					
Chem 3	SoAP t3	/					
Chem 4	SoAP t4	030					
Chem 5	SoAP t5	/					
Chem 6	SoAP t6	/					
Wash Time	Cyt ti	7.00					
Additional	Add	no add					
Cool Down To Cdu	Add Cool CduI						
Highest Cd Temp	Add Cool Cdu						
Cool Down To Cdn	Add Cool CdnI						
Lowest Cd Temp	Add Cool Cdn						
Additional Stop Time	Add Stop t						
Additional Soak Time	Add SoaH t						

Table 25 (continued)

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Program 9 – Starch

Table 25 (continued)

Segment	id	1	2	3	4	5	6
Spin Time	Spin SP. T	5.00					
Spin Type		Smart					
Spin Speed GF	SP						
Drain	drain	d1					
Drain Movement	drain						
Drain Time	drain t						
Spin Delay Time	Spin dEti td	005					
Total Time	t=	12.05					
Tumble	tu	030					

Table 25

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Program Worksheet

		Rinse and Spin	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Wash Time	Cyt ti						
Rotation	rotE						
Rotation Action Time	rotE A						
Rotation Stop Tme	rotE S						
Speed	rotE SP						
Temperature	teMP F						
Supply Flush 1	SE-i i1						
Supply Flush 2	i2						
Supply Flush 3	i3						
Supply Flush 4	i4						
Supply Flush 5	i5						
Cold Water Inlet	iCold						
Hot Water Inlet	iHot						
Flush	Flush						
Level Type	SE-LE LE						
Level	SE-LE LE.P						
Level Control	LE.Co LE.S.P						
Chem 1	SoAP t1						
Chem 2	SoAP t2						
Chem 3	SoAP t3						
Chem 4	SoAP t4						
Chem 5	SoAP t5						
Chem 6	SoAP t6						
Additional	Add						
Cool Down To Cdu	Add Cool CduI						
Highest Cd Temp	Add Cool Cdu						
Cool Down To Cdn	Add Cool CdnI						
Lowest Cd Temp	Add Cool Cdn						
Additional Stop Time	Add Stop t						
Additional Soak Time	Add SoaH t						
Spin Time	Spin SP. T						
Spin Type							
Spin Speed GF	SP						

Table 26 (continued)

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Program Worksheet

Table 26 (continued)

		Rinse and Spin	Wash1	Rinse 1	Rinse 2	Rinse and Spin	
Segment	**id**	**1**	**2**	**3**	**4**	**5**	**6**
Drain	drain						
Drain Movement	drain						
Drain Time	drain t						
Spin Delay Time	Spin dEti td						
Total Time	t=						
Tumble	tu						

Table 26

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